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NPIC/TSSG/RED-1860-69  
9 October 1969

MEMORANDUM FOR THE RECORD

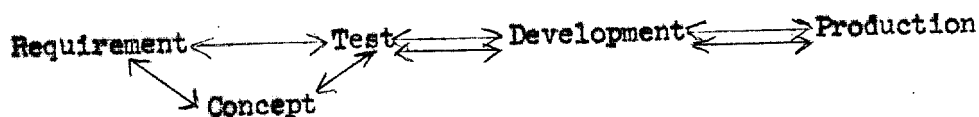
SUBJECT: Investigation-Viewing Systems Study

25X1 1. During the morning of Monday, 6 October 1969, the Project Officer visited [ ] for the purpose of investigating the feasibility of conducting a Viewing Systems Study. This proposed study is a NPIC FY-70 Research and Development Project.

25X1 2. [ ] personnel contacted were: [ ] Programs Administrator; [ ] Manager, Research & Development; Mr. [ ] - Manager, Design Group. 25X1

25X1 3. The Project Officer presented the basic idea behind the proposed study (see the Introduction paragraph of the Design Objectives), and asked the [ ] personnel to comment on the possibility of conducting such a project. Both [ ] acknowledged that such a study could be made if it were restricted to investigating the MANUFACTURING FEASIBILITY and PHYSICAL LIMITS portions of the cycle normally used in designing a new optical system. 25X1

25X1 4. [ ] diagramed this cycle, as presently practiced at [ ] as follows: 25X1



He referred to the lefthand portion of this diagram as the preliminary design or creative phase, and characterized it as a closed loop wherein there was bi-directional interplay between the facets, "REQUIREMENT, CONCEPT and TEST". This loop could be entered at any point, e.g., a REQUIREMENT could exist for which a CONCEPT and TEST/S could be developed. Iterative analysis would then be conducted, in either or both directions around the loop, to prove or disprove the feasibility of various approaches. If an approach was finally proved feasible, and determined to be the best approach, advance would be made to the development phase, and subsequently, the production phase. However, even during pursuit of these latter phases, there would be continual interplay between them and the preliminary design phase, with modifications of the product, as necessary. It was explained that an analogous approach would be made if the preliminary design loop were entered at the CONCEPT or TEST points.

Declass Review by

NIMA/DOD

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GROUP 1  
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25X1 5. [ ] then pointed out that MANUFACTURING FEASIBILITY and  
PHYSICAL LIMITS were portions of the TEST facet of the preliminary design  
or creative phase. During these portions of the TEST facet, various  
25X1 optical system combinations would be explored until the best apparent  
approach had been attained. These two portions were the ones which both  
[ ] believed were capable of systemization.

6. When queried about the recommended direction the Viewing Systems  
Study should take, as well as the estimated minimum cost [ ] fur-  
nished the following specifics:

25X1 a. The ultimate aim should be a publication similar to the Human  
Engineering Design Guide compiled by the [ ]  
[ ] The Viewing Systems Guide would be written in terms of an  
optical item being practical or impractical. Purely as an example,  
the following might be a typical entry.

(1) Image Rotation (in an optical system) -

(a) Methods to accomplish -

Dove prism  
Double dove prism  
"X" mirror  
Pechan prism  
Roof prism  
Etc. -----

(2) Factors to be considered -

(a) Path length  
Short as possible  
Etc. -----

(b) Angular field  
Limited in all prisms  
Etc. -----

(c) Parallel beam  
Required  
Not required

(d) Cost  
Alignment complexity  
Material used  
Etc. -----

(e) Size  
Limits

(f) Runout

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b. A continuing update program of such a publication would be required in order to stay abreast of the latest development.

c. A rigid requirement for such a study would be full time participation by a qualified group of the best experts obtainable.

d. The study should start slowly, say with a 2 man-year level of effort funded at approximately [ ] and building gradually to some, to be determined, annual level of effort.

e. The contract for such a study should include an initial period of time for organization of the working group, i.e., termination of their present assignments and formulation of best approach before actual compilation of data.

25X1  
25X1 7. Messrs. [ ] were unanimous in their opinion that [ ] would be interested in performing the Viewing Systems Study.

[ ]  
Project Officer  
TSSG/RED/SRB

Distribution:

Orig - RED Rt & File

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25X1 NPIC/TSSG/RED/SRB/ [ ] (9 Oct 69)

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